Environmental Health Coalition

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Supporting Document 16

June 15, 2005

Chairman and Members of the Regional Board
Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Dear Chairman and Boardmembers:

Please find enclosed Environmental Health Coalition's *How to Achieve Environmental Justice Using a Precautionary Approach in Environmental Decisions: Recommendations for Sediment Quality Decisions in San Diego Bay* referenced at the last Board Meeting. We are appreciative of the interest and support that many staff and Boardmembers have expressed over the years for environmental justice concerns such as protecting sensitive and heavily impacted populations from pollution.

An early and enduring commitment by the Board to restoration of Chollas Creek and Bay sediment cleanup is evidence that this Board has always taken an interest in urban water quality issues and has been ready to tackle the toughest problems in order to meet the mission of protecting of water quality. The shipyard sediment cleanup decision is another such issue. We hope that this guidance and recommendations will offer helpful suggestions on how the Board can reflect environmental justice and the precautionary approach in your decision about the sediment cleanup in San Diego Bay.

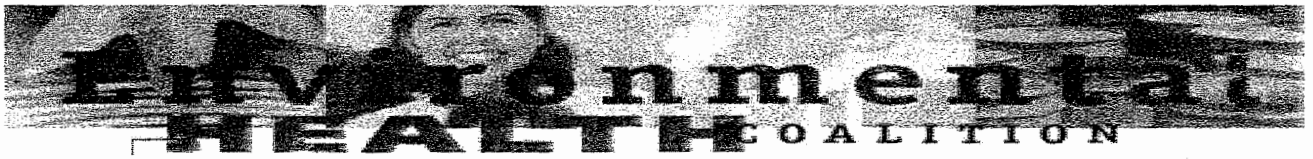
We especially hope that the Regional Board will schedule a public hearing soon for consideration of the Cleanup and Abatement Order and will direct the staff to hold the hearing in a time and location accessible to the most impacted community members.

Thank you for your consideration

Sincerely,

Laura Hunter, Director
Clean Bay Campaign

Georgette Gómez, Community Organizer
Clean Bay Campaign



How to Achieve Environmental Justice Using a Precautionary Approach in Environmental Decisions:

Recommendations for Sediment Quality Decisions in San Diego Bay

Environmental Health Coalition (EHC) has worked for environmental justice for communities in San Diego for its entire 24-year history. EHC's dedication to pollution prevention is summarized by one of our organizational goals: *"To establish the precautionary principle and pollution prevention as the basis of all environmental and public health policies."* EHC representatives participated in the development of the ground-breaking Wingspread Statement on the Precautionary Principle and served as a Co-Chair of the California Environmental Protection Agency's Environmental Justice Advisory Committee. In 1987, EHC initiated its Clean Bay Campaign in response to the need for toxic sediment clean up in the Bay. Environmental justice, precaution, and environmental regulation come to a nexus in the decision by the Regional Board in setting sediment cleanup levels for the commercial shipyards in the Bay.

Several members of the Regional Water Quality Control Board, San Diego Region (Regional Board) and staff have stated their interest in and commitment to protecting environmental justice communities and using the precautionary principle or a precautionary approach in their decision-making. We are encouraged by their interest. However, they have expressed uncertainty regarding how to accomplish these goals. The purpose of this paper is to provide background on this issue and to articulate specific recommendations regarding how these policies should manifest in the activities and decision-making processes of the Regional Board, State Water Resources Control Board and other Boards, Departments, and Offices of CalEPA with a responsibility to protect environmental health. These recommendations are directed specifically toward the decision to establish sediment cleanup levels for the NASSCO and Southwest Marine commercial shipyards.

Background

Sediments play a significant role in the health of an aquatic ecosystem for they provide the habitat for aquatic life that lie at the base of the food chain. Contaminants in the sediments are consumed by benthic organisms (organisms living on the bottom of the bay) then those contaminants travel up the food chain to eventually reside in fish and shellfish tissues. Sediment quality in many of our state bays and estuaries is very poor. In many, particularly urban, areas sediments have become contaminated with wastes from military, industrial, urban runoff, oil and sewage spills, and other discharges. Several notorious chemicals that have been measured in San Diego Bay are of special concern for human health as they readily bioaccumulate (accumulate in tissues faster than the body can process them out) in humans. These same contaminants also biomagnify as they

move up the food chain; biomagnification is a process where contaminants can increase in concentration from one link in the food chain to the next. We are concerned about the phenomena of biomagnification and bioaccumulation because together they mean that even small concentrations of chemicals in the environment can find their way into organisms in dosages sufficient to cause serious problems. Many chemicals possessing bioaccumulation and biomagnification potential are present in the sediments at the San Diego Bay commercial shipyards and contaminated naval facilities.

The role of sediment cleanup is critical. San Diego Bay is so degraded that it requires restorative action in order to recover its ecosystem viability, to protect users of the Bay, and consumers (human and non-human) of the fish and shellfish. Restoration of contaminated sediments and aquatic environments has been determined to be a fundamental priority to protect the health of communities of color and low income communities by numerous environmental justice organizations and government agencies. Cleanup efforts are especially important to these communities because they are the most highly exposed and risk "avoidance" (e.g. eating less fish) is simply not realistic economically or, in some cases, a culturally appropriate option. Thus, these communities disproportionately bear the impacts of any contamination left in place.[1] Last, since many of the contaminants have been banned from production (PCBs, Chlordane) or inputs reduced or eliminated (mercury) and many of these chemicals remain in the environment decades after their discharge, the presence of these contaminants can only be reduced through cleanup efforts.

In making important decisions about environmental health issues, Environmental Health Coalition and its allies urge the decision-makers to employ a precautionary approach in determining actions. This approach is often summarized as follows:

> *When an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.*

The U.S. Commission on Ocean Policy describes it as:

> *...applying judicious and responsible management practices based on the best available science and on proactive, rather than reactive, policies. Where threats of serious or irreversible damage exist, lack of full scientific certainty shall not be used as a justification for postponing action to prevent environmental degradation.*[2]

San Francisco Board of Supervisors Precautionary Approach Policy states:

> *Where threats of serious or irreversible damage to people or nature exist, lack of full scientific certainty about cause and effect shall not be viewed as sufficient reason for*

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[1] NEJAC at 86

[2] http://www.oceancommission.gov/documents/prepub_report/chapter3.pdf pg. 6

the City to postpone measures to prevent the degradation of the environment or protect the health of its citizens....Where there are reasonable grounds for concern, the precautionary approach to decision-making is meat to help reduce harm by triggering a process to select the least potential threat.[3]

However, all statements about the application of precautionary principle generally contain a version of this formula: ***When the health of humans and the environment is at stake, it may not be necessary to wait for scientific certainty to take protective action.***

Most relevant, is the recent action by the CalEPA when they took a recent action to define and endorse the concepts of precautionary action and cumulative impacts in their work. The adopted definitions are:

Precautionary Approach *means taking anticipatory action to protect public health or the environment if a reasonable threat of serious harm exists based upon the best available science and other relevant information, even if absolute and undisputed scientific evidence is not available to assess the exact nature and extent of risk.*

Cumulative Impacts *means exposures, public health or environmental effects from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts take into account sensitive populations and socio-economic factors, where applicable and to the extent data are available.* [4]

Addressing Uncertainty

While many decisions that face the environmental decision-makers fall into various categories of uncertainty, it is important to distinguish between the uncertainty of knowing the impacts at any given moment (e.g. trying to figure out how much fish people do eat, how many pregnant or nursing women are eating the fish, how much mercury and other pollutants people are actually absorbing—all of which have some uncertainty associated) and uncertainty about the underlying science of mercury/other pollutant toxicity. In this case, it is important to note that there is really **very little** uncertainty about the fact that the chemicals in these contaminated sediments are a real problem and they pose very real risks. Bioaccumulative, biomagnifying, and persistent toxic chemicals present in the marine environment, if not removed, will continue to pose a threat to human health and the environment far into the future.

How California state regulators respond to the need to cleanup, restore, and maintain sediment health in bays, estuaries, fresh water, and marine environments is of critical importance and several actions are currently underway.

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[3] http://temp.sfgov.org/sfenvironment/aboutus/innovative/pp/sfpp.htm

[4] *http://www.calepa.ca.gov/EnvJustice/ActionPlan/Default.htm#Definitions*

Recent and Future Relevant Actions

California Environmental Justice Guidelines

In October, 2003, California EPA adopted their *Guidance on Environmental Justice*. EHC's Executive Director, Diane Takvorian was the co-Chair of the Advisory Group that developed the recommendations. These guidelines make several recommendations regarding environmental justice. In summary, the recommendations outline the following goals:

1. Provide for meaningful public participation
2. Integrate environmental justice into all environmental programs
3. Improve research and data collections with respect to environmental justice, and
4. Ensure coordination and accountability in addressing environmental justice. [5]

In particular, the recommendations underscored the importance of using precautionary approaches to environmental and public health protection. The recommendations state, ***"Committee members believe it is not necessary to wait for actual, measurable harm to public health or the environment before evaluating alternatives that can prevent or minimize harm...additional precaution may be needed in order to address or prevent environmental justice problems."***[6]

State Sediment Quality Objectives Process

Acting under a Court Order, the State Water Resources Control Board is developing Sediments Quality Objectives (SQO) and is preparing to adopt them in 2007. Several advisory committees have been established to advise the State Water Board on this process. EHC is a member of the California Sediment Quality Advisory Committee.

National Environmental Justice Advisory Council (NEJAC)

The NEJAC is a federal advisory committee to the US EPA that addressed the impacts of compromised aquatic ecosystems on communities of color, low-income, tribes, and other indigenous peoples. In November, 2003 they released a report on fish consumption that provides advice and recommendations to EPA regarding measures that should be taken to improve the quality, quantity, and integrity of the Nation's aquatic ecosystems in order to protect the health and safety of people consuming fish, aquatic plants, and wildlife. Among other things, this document also raised concerns over a risk avoidance approach where the burden of protection is on the individual and not the polluter versus a risk reduction approach where the risks are reduced or removed so that the burden is lifted from the individual. This report also reports subsistence consumption rates in wide ranges with many over 161 g/day and several tribes over 1000 g/day.[7] EHC has relied heavily on the content of this exhaustive document and we strongly urge the Regional Board to review the report in full.[8]

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[5] Entire report can be found at http://www.calepa.ca.gov/EnvJustice/Documents/2003/FinalReport.pdf

[6] Final Recommendations Report of the Cal/EPA Advisory Committee on Environmental Justice, p. 13

[7] NEJAC, Page 28.

[8] http://www.epa.gov/compliance/resources/publications/ej/fish_consump_recom_report.html

National Forum on Contaminants in Fish

A recent forum was held in January, 2004 in San Diego. According to a presentation by Kate Mahaffey, USEPA, new research has shown that "cord blood" (blood in the umbilical cord) concentrates mercury and can be as high as 70% more in the cord blood than the maternal blood. This means that mercury concentrations in the mother's blood can be expected to be 70% higher in the fetus. It has also been demonstrated that exposures are higher among women who eat fish and higher among Asians and people of Pacific Island background. Also, blood mercury concentrations were seven times higher among women who reported eating fish two or more times a week in the past 30 days compared to non-fish eaters.[9]

EHC Fish Consumption Surveys of Fishers on Piers in San Diego Bay

During 2004, EHC conducted a community survey of people fishing from piers in the vicinity of the shipyards and known contaminated sediments sites in the Bay. The survey sought to determine who fishes, how often people fish, who eats the fish, whether they eat fish skin or other organs, and how they cook the fish. Our survey sample is not a representative sample of all San Diego Bay fishers or all south bay residents. However, it is a selective sample of a group that is highly exposed to fish from near the shipyards and the southern portion of San Diego Bay. The survey did not include questions on income but these fishers are from low-income communities and they appear to be engaged in subsistence fishing. For the purpose of protecting highly exposed populations it is appropriate to selectively sample this group -- fishers who fish frequently off of piers near shipyards in San Diego Bay. Among this subpopulation are individuals who fish daily, who catch up to 20 fish at a time, who stew fish, who eat fish parts other than fillets, and who feed fish to their children.

This survey provides the first San Diego-specific data on subsistence-type fishing. It confirms that estimates made of the quantities of fish eaten by subsistence fishers in other places also apply here. The frequency of fishing and fish eating in our pier fishing population is very different than that of statistically average Americans and may reach or exceed the 161 grams per day level recommended by OEHHA taken from the Santa Monica survey value.[10] This data clearly establishes that a subpopulation of San Diego residents fish frequently, eat the fish, and eat the skin -- not only the fillets. This report confirms cultural differences among populations that have not been taken into account in other reports of fish consumption. For example, the results confirm that people are eating parts of the fish other than the fillets (which is the part of the fish typically analyzed for fish consumption studies) and in some cases the fish is prepared in a manner that uses the whole fish. This is of particular importance because contaminants can concentrate in the skin, fat, and internal organs. Additionally, the cooking methods that were most mentioned in the survey were frying and stewing, methods that remove less contaminants from the fish than baking or broiling. A selection of key results of this and other studies indicate any Health Risk Assessment (HRA) based on the assumption that only fillets are

[9] http://www.epa.gov/waterscience/fish/forum/2004/presentations/monday/mahaffey.pdf
[10] http://www.oehha.ca.gov/fish/special_reports/consumexec.html

consumed or that less than 161 grams per day is consumed understates the human health risk for this group.[11]

San Diego Regional Board to establish sediment cleanup levels for San Diego Bay

The most important action of all we anticipate will take place in 2005 when the San Diego Regional Water Board will establish sediment cleanup levels for several highly contaminated areas setting an important precedent for the Bay.

Recommendations for Use of Precautionary Principle and Environmental Justice in Establishing Sediment Cleanup Levels in San Diego Bay

EHC urges the Regional Board take the following specific actions and follow the recommendations below when making its decision on the sediment cleanup levels for NASSCO and Southwest Marine.

1. Ensure that meeting information/notices/location be appropriate to the most impacted public members.

EHC has identified that many of the people who fish regularly for consumption in the Bay are Latino, Southeast Asian, and Filipino. Meetings notices and information should be published in English, Spanish, and Tagalog at a minimum. Preferably, the meetings should be held in Barrio Logan or National City, near where the shipyards are located. We request that the public workshops and hearings be held at a location and time, such as in the evening, when the general public is able to attend. We request that the Regional Board also provide translation services for attendees at the hearing. These specific actions would be in compliance with the CALEPA EJ Guidelines which we urge the Board to review and incorporate into all public participation activities.

2. Apply precaution and consider seriousness, irreversibility, and cumulative impacts in decision-making.

Regarding the application of a Precautionary Approach , the EJ Advisory Committee encouraged all CalEPA agencies to *"Officially recognize the importance of precaution, and that it is not necessary or appropriate to wait for actual, measurable harm to public health or the environment before evaluating alternatives that can prevent or minimize harm."* [12]

Such recognition and application clearly applies to sediment cleanup levels for chemicals that persist in the environment, biomagnify, and bioaccumulate up the food chain. In the shipyard sediment cleanup decision, levels for PCBs, mercury, PAHs, and other bioaccumulators must be established in a manner that prevents the damage that may occur in the future due to the nature of these chemicals. This can be accomplished by providing additional measures of protection in setting the cleanup goal.

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[11] EHC Survey of Fish Consumption on Piers in San Diego Bay, March, 2005

[12] Final Recommendations Report of the Cal/EPA Advisory Committee, p. 21

3. When determining cleanup levels for persistent and bioaccumulators, use of risk assessments must be de-emphasized and precautionary action emphasized.

The problems and weaknesses of health risks assessments (HRA) are legion. They assume that some amount of risk is "acceptable", that there is additional assimilative capacity in the environment available, and that such acceptability and capacity can be determined. Usually, what is "acceptable" is decided by people who will not be bearing the risks. Many simplifying assumptions are used, such as that toxic effects from the exposure in question are not affected in any way by the multiplicity of other exposures that occur simultaneously in the real world, and that there is a threshold below which a given substance is not harmful. We know this is not the case in the real world. Real world impacts depend on the synergistic and cumulative nature of the chemicals, exposures, and life stages of the receptor. Further, chemicals like PCBs, lead, and mercury can have serious impacts at extremely low doses.

HRAs promote a false sense of precision, accuracy, and objectivity when in fact they are uncertain, variable and, usually (when conducted by the polluter) highly biased. Risk assessment is widely known to perpetuate and exacerbate the disproportionate burdens on environmental justice communities.[13] The developers of risk assessment methodology always maintained that HRAs were meant to be *one of many* "tools" for making decisions. But history and our own considerable experience has shown us that risk assessment is very often the single determiner of the final decision to allow pollution to be discharged or to remain in place.

It is possible to selectively employ HRAs. We believe that such selective use is called for here. EHC recommends that where the contaminants to be regulated or cleaned up are bioaccumulative, persistent, and/or highly toxic, the HRA should not be used to justify leaving contaminants in place. Unlike many chemicals, these chemicals are highly predictable in the environment over time. What is certain is that they are toxic, they will persist for millennia, and they will bioaccumulate and biomagnify and contaminated our food chain. What is uncertain is exactly **when** they will be the most toxic, meaning we cannot know for certain which of our future generations can expect the most damaging impact. Since a tenet of precaution is to tread most carefully where damage is expected, serious, and may produce irreversible, long-term effects, the harmful chemicals found in San Diego Bay call for aggressive, precautionary action.

4. Where risk assessment is used the level of protection for human health must be driven by those most at risk.

For many years and, in some cases, even today, HRAs were developed on the basis of the risk to a 25 year-old, 170-lb white, male consumer. This is not most at-risk or most exposed individual. Children and pregnant women are far more sensitive receptors. However, a fetus in-utero of a woman who consumes at a subsistence level is the most at-risk from exposure. The Regional Board must give additional attention to the chemicals

[13] NEJAC at 55-56, footnote 159

that are of particular concern for children, nursing infants, and a developing fetus—PCBs, lead, mercury, arsenic, and PAHs. The Board's decision should reflect a more stringent, protective level justified by the special vulnerabilities of children and the fetus.

5. Level of protection should be set assuming subsistence fishers and their families are consuming fish from the Bay.

The sediment cleanup level must be set to ensure protection of these communities in the long-term. We know that there is, at least, a subpopulation that is consuming fish frequently from the Bay and in significant amounts. If used, consideration of the health risk assessment must be done in the service of protecting all consumers, not just those who have certain type of fish eating habits who may only consume fillets of fish. Our pier survey establishes that a substantial portion of people who eat fish out of San Diego Bay eat more than fillets. The assumption that exposure to contaminants in fish is limited to those found in fillets is clearly erroneous for those people who do subsistence fishing in San Diego Bay. Any consumption level estimates used must assume that the **whole** fish is eaten instead of using a more limited assessment restricted to tissue or fillets only. This will have a significant impact on the risks calculated.

6. The healthfulness of eating uncontaminated fish should not be used as an excuse to minimize the risks of eating contaminated fish.

At the 2004 *National Forum on Contaminants in Fish*, research was presented that demonstrated that the health benefits of consuming fish did not necessarily override the risks of some contamination. Mercury, in particular, was shown to inhibit the natural protective properties of Omega-3s in fish and, in fact, was antagonistic to it. Mercury was also linked to health risks beyond neural and reproductive damage. One study showed that mercury levels were highly significant in atherosclerosis (thickening of the arteries) demonstrating a 7.3% increase in progressive thickening of the artery for each additional ppm of mercury in hair. In a recent article in E Magazine on women's health, Dr. Ellen Silbergold, a public health professor at John's Hopkins University reports that early exposure of a fetus to mercury can increase the severity of autoimmune symptoms and speed up the onset of diseases like lupus.[14] The EPA estimates that one in every six children born in the United States -about 630,000 children annually- is exposed in the womb to mercury levels that exceed the current safety level.[i] This places children at risk for a loss of IQ, learning disabilities, and other cognitive impairments. Children are more susceptible to contaminants that affect the nervous system because their brains are developing. Scientists who study mercury are finding subtle damage to the brain at lower and lower levels of exposure.[ii] Another concern is that damage caused by mercury is permanent. PCBs have also been linked to developmental problems in children at very low exposures.[iii]

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[14] Our Bodies, Ourselves:First-World Women Face Unique Environmental Threats, by Melissa Knopper, p.4, www.emagazine.com

Finally, contamination with mercury and richness in Omega-3's did not necessarily correlate. Some species that suffer from high levels of contamination did not have high levels of Omega-3.

7. Fish consumption advisories could be considered an interim protection step but not a means of meeting a beneficial use protection standard.

This is obvious. The Regional Board should not adopt a cleanup limit that relies on postings or advisories to "meet" beneficial uses. In fact, to the extent that advisories are needed, the Bay should be considered impaired for that beneficial use.

8. Cumulative impacts, exposures, and risks should be considered in regulatory decisions and the current polluted condition of the most impacted communities should result in a more protective cleanup level.

The communities most impacted by this decision are also the communities that are the most heavily burdened with toxic exposures in San Diego County. Among the co-risk factors of these communities are the highest lead contamination in housing stock, highest cancer, reproductive, respiratory risks from air contaminants, and high poverty rates. These co-exposure rates necessitate additional, more protective actions to respond to the high cumulative burdens of these community residents and should be reflected in regulatory findings and decision-making by local environmental regulators. This current and disproportionate burden should be reflected in the Board's justification of establishing more protective limits and should be reflected in the Board's findings and decision-making.

9. The basis of protection when determining health risks based on fish consumption should be the amount of fish that would be consumed if the area were not contaminated, not what is consumed now under known contaminated conditions.

One important issue that is seldom discussed related to fish contamination is that the more the concern that fish may be contaminated, the fewer fish people are inclined to eat in general. This, in turn, depresses the level of protection agencies often feel is necessary to provide to the public because they are not eating as much fish as they would if it were safe. Fortunately, the NEJAC addressed this issue head on, *"When environmental agencies set or approve water quality standards that rely on a picture of exposure that takes people to be eating smaller quantities of fish, agencies will permit relatively greater quantities of pollutant to remain in or be discharged to the water and sediments. That is to say, agencies will set less protective standards."* [15]

The NEJAC study goes on to note that these conditions feed a self-fulfilling downward spiral in protection as the environment and the fish are allowed to be become increasingly contaminated (or cleanup is not done adequately) and individuals are asked

[15] NEJAC at 49

to reduce their consumption or fewer people fish or eat the fish due to the warnings, or there are fewer fish caught. All of this drives a lower fish consumption rate upon which to base regulatory action and the spiral continues downward as the agencies then act to allow greater quantities of pollutant in (or to remain) in the ecosystems.

The response recommended by the NEJAC is to construct baselines that are normative rather than descriptive. For example, do not base fish consumption rate on the current fish consumed today, but rather **what would be consumed if the fish were safe to eat**. This should be the goal that we are striving for in our protection of beneficial uses. We know that if the fish were safe to eat many San Diego residents would be eating far more fish from the Bay.

Clean Water Act and State Mission clearly requires protective, restorative action

The goal of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The mission of the State and Regional Boards is to preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. The Regional Board will provide a tremendous benefit to the public by implementing the spirit of its mission and the letter of the laws that it enforces and establish protective clean up levels for San Diego Bay.

There is no other way.

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[i] Mahaffey, USEPA and *Scientists worry that mercury dangers mimic deadly lead*, Joan Lowy, Scripps Howard News Service, January 26, 2005

[ii] Lowy, ibid, January 26, 2005

[iii] National Environmental Justice Advisory Committee (NEJAC), Fish Consumption Report:, page 73